$4m - 2p = 0$; $\left(\frac{1}{3}, \frac{2}{3}\right)$

$-3m + 9p = 5$

$4m-2p=0$ | $-3\left(\frac{1}{2}p\right)+9p=5$ | $4m-2\left(\frac{2}{3}\right)=0$

$\frac{4m}{4}=\frac{2p}{4}$ | $-\frac{3}{2}p+9p=5$ | $4m-\frac{4}{3}=0$

$m=\frac{1}{2}p$ | $\frac{15}{2}p=5$ | $4m=\frac{4}{3}$

$\frac{15}{2}=\frac{15}{2}$ | $m=\frac{1}{3}$

$p=\frac{2}{3}$

Algebra 2 5.0 E/C
Chapter 3 Review

Name: _____
Date: _____ Pd: _____

Solve the following systems using any method you choose:

1) $\begin{cases} 2x+3y=4 \\ 3x-4y=7 \end{cases}$

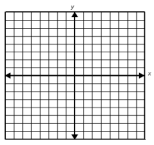
2) $\begin{cases} x+y=-12 \\ 2x-3y=6 \end{cases}$

3) $\begin{cases} 5x-2y=3 \\ 2x-y=0 \end{cases}$

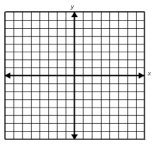
4) $\begin{cases} 5x-7y=2 \\ 3x=4y \end{cases}$

Graph the following inequalities:

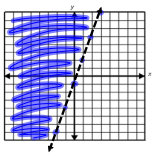
5) $y-2x \le 1$



6) $-2y+6x<2$



6) $-2y+6x<2$



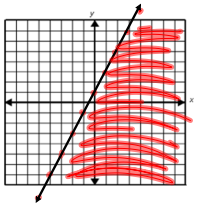
$-2y+6x<2$

$-6x \quad -6x$

$\frac{-2y}{-2} < \frac{-6x+2}{-2}$

$y > 3x-1$

5) $y-2x \le 1$



$y-2x \le 1$

$+2x \quad +2x$

$y \le 2x+1$

4) $\begin{cases} 5x-7y=2 \\ 3x=4y-7 \end{cases}$

$(-8,-6)$

$5x-7y=2(4)$

$3x-4y=-7(-7)$

$20x-28y=8$

$-21x+28y=0$

$-x=8$

$x=-8$

$3(-8)=4y$

$-24=4y$

$y=-6$

3) $\begin{cases} 5x-2y=3 \\ 2x-y=0 \end{cases}$

$(3,6)$

$2(5x-2y=3)$

$-5(2x-y=0)$

$10x-4y=6$

$-10x+5y=0$

$y=6$

$2x-6=0$

$2x=6$

$x=3$

2) $\begin{cases} x+y=12 \\ 2x-3y=6 \end{cases}$

$(-6,-6)$

$3(x+y=12)3$

$3x+3y=-36$

$2x-3y=6$

$5x=-30$

$x=-6$

$-6+y=-12$

$y=-6$

1) $\begin{cases} 2x+3y=4 \\ 3x-4y=7 \end{cases}$

$\left(\frac{37}{17},-\frac{2}{17}\right)$

$4(2x+3y=4)$

$3(3x-4y=7)$

$8x+12y=16$

$9x-12y=21$

$17x=37$

$\frac{17}{17}\ \frac{17}{17}$

$x=\frac{37}{17}$

$2\left(\frac{37}{17}\right)+3y=4$

$17\left(\frac{74}{17}+3y\right)=4(17)$

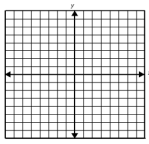
$74+51y=68$

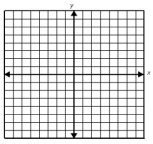
$51y=-6$

$y=-\frac{6}{51}=-\frac{2}{17}$

7) $\begin{cases} -2y < 4x + 2 \\ y > 2x + 1 \end{cases}$

8) $\begin{cases} y \le -2x + 4 \\ x > -3 \\ y \ge 1 \end{cases}$





Cumulative Questions:

9) Find the equation of the line through the points (-4,7) and (-5,2).

Perform the following operations given $f(x) = x^2 + 4$ and $g(x) = 2x - 6$.

10) $f(x) - g(x) =$

11) $(f \bullet g)(x) =$

12) $f(g(x)) =$

13) Find the inverse of g(x).

Perform the following operations given $f(x) = x^2 + 4$ and $g(x) = 2x - 6$.

12) $f(g(x)) =$

$f(2x-6)$

$(2x-6)^2+4$

$(2x-6)(2x-6)+4$

$4x^2-12x-12x+36+4$

$4x^2-24x+40$

13) Find the inverse of g(x).

$g(x)=2x-6$

$y=2x-6$

$x=2y-6$

$2y=x+6$

$y=\frac{x+6}{2}$

$g^{-1}(x)=\frac{x+6}{2}$

Perform the following operations given $f(x) = x^2 + 4$ and $g(x) = 2x - 6$.

10) $f(x) - g(x) =$

$(x^2+4)-(2x-6)$

$x^2+4-2x+6$

$x^2-2x+10$

11) $(f \bullet g)(x) =$

$(x^2+4)(2x-6)$

$2x^3-6x^2+8x-24$

9) Find the equation of the line through the points (-4,7) and (-5,2).

(x_1, y_1) (x_2, y_2)

$m=\frac{y_2-y_1}{x_2-x_1}$

$m=\frac{2-7}{-5-(-4)}=\frac{-5}{-1}=5$

$y-y_1=m(x-x_1)$

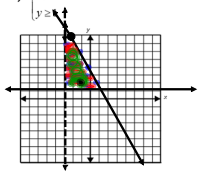
$y-7=5(x-(-4))$

$y-7=5x+20$

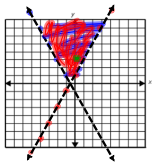
$+7 \quad +7$

$y=5x+27$

8) $\begin{cases} y \le -2x+4 \\ x > -3 \\ y \ge \end{cases}$



7) $\begin{cases} -2y < 4x+2 \\ y > 2x+1 \end{cases}$



$\frac{-2y}{-2} < \frac{4x}{-2} + \frac{2}{-2}$

$y > -2x-1$

Solve the following linear programming problem (Use your graph provided, and make sure your answer is a **complete sentence**.)

14) A biologist needs at least 50 rodents for an experiment. She cannot use more than 20 mice or more than 35 rats. Each mouse costs $5.00 and each rat costs $3.00. How many of each rodent should she use in order to minimize the cost?

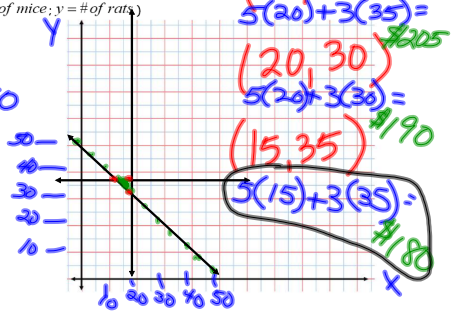
Constraints: ($x = \#\,of\ mice$; $y = \#\,of\ rats$)

$x + y \ge 50$

$x \le 20$

$y \le 35$

$Y \ge -x+50$



M R

(20, 35) $5(20)+3(35) =$ #205

(20, 30) $5(20)+3(30) =$ #190

(15, 35) $5(15)+3(35) =$ #180

Answer: The biologist should use 15 mice and 35 rats.